CLAIMS

1. A system for continuously sensing mechanical activity of a heart and adjusting a pacing therapy based on the sensed mechanical activity, comprising:

a processor-based electronic cardiac pacing engine; and

a single mechanical sensor adapted to detect cardiac contractions of at least a left atrial chamber, a left ventricular chamber, and a right ventricular chamber and provide an output signal corresponding to said detected cardiac contractions to the processor-based electronic cardiac pacing engine.

2. A system according to claim 1, wherein said single mechanical sensor is adapted to be coupled at least one of the following:

a portion of a coronary sinus ostium,

a portion of a coronary sinus,

a portion of a cardiac vein.

3. A system according to claim 1, further comprising an additional mechanical sensor adapted to mechanically couple to a discrete portion of the right ventricular chamber

4. A system according to claim 1, wherein the single mechanical sensor comprises one of a tensiometric-type sensor and an accelerometer sensor.

5. A system according to claim 4, wherein said accelerometer sensor comprises one of a single axis accelerometer and a multiple axis accelerometer.

6. A system according to claim 4, wherein the tensiometric-type sensor further comprises a transvenous delivery mechanism coupled to said tensiometric-type sensor.

7. A system according to claim 6, wherein said transvenous delivery mechanism comprises one of: a stylet, a single lumen delivery catheter, a guidewire.

8. A system according to claim 3, wherein the additional mechanical sensor comprises one of a tensiometric-type sensor and an accelerometer sensor.

9. A system according to claim 8, wherein said accelerometer sensor comprises one of a single axis accelerometer and a multiple axis accelerometer.

10. A system according to claim 8, wherein the tensiometric-type sensor further comprises a transvenous delivery mechanism coupled to said tension-metric sensor.

11. A system according to claim 10, wherein said transvenous delivery mechanism comprises one of: a stylet, a single lumen delivery catheter, a guidewire.

12. A system according to claim 1, wherein the processor-based electronic cardiac pacing engine comprises an implantable pulse generator.

13. A system according to claim 1, wherein the processor-based electronic cardiac pacing engine comprises an implantable cardioverter-defibrillator.

14. A system according to claim 1, wherein the processor-based electronic cardiac pacing engine further comprises a programmable medium for executing computer readable instructions.

15. A system according to claim 14, wherein the computer readable medium includes instructions for delivering one of: a bradycardia pacing modality, a

tachycardia pacing modality, a cardiac resynchronization therapy modality, a single-chamber pacing modality.

16. A system according to claim 14, wherein the computer readable medium includes instructions for delivering a cardiac resynchronization therapy modality.

17. A system according to claim 1, wherein the processor-based electronic cardiac pacing engine comprises an external pulse generator.

18. A method of delivering cardiac resynchronization therapy with a system for continuously mechanically sensing contractions of a heart chamber, said system comprising a processor-based electronic component operatively electrically coupled to a mechanical sensor adapted to be mechanically coupled to a left ventricle so that said sensor provides an output signal for each one of atrial contractions, left ventricular contractions, and right ventricular contractions and wherein said stylet is in electrical communication with the processor-based electronic component, said method comprising:

sensing an atrial contraction and providing a temporal output signal related thereto;

sensing at least one ventricular contraction and if the at least one ventricular contraction comprises a single discrete ventricular contraction event, then:

continuing to deliver a cardiac resynchronization therapy without modifying any pacing therapy delay intervals; and if the at least one ventricular contraction comprises two discrete ventricular contraction events, then:

electrically stimulating a first ventricular chamber at an interval of time prior to or later than a second ventricular chamber;

detecting a contraction event of the first ventricular chamber relative to the second ventricular chamber;

modifying the interval of time until the at least one ventricular contraction comprises the single discrete ventricular contraction event; and

continuing to deliver the cardiac resynchronization therapy without further modifying the interval of time.

19. A computer-readable medium for delivering cardiac resynchronization therapy with a system for continuously mechanically sensing contractions of a heart chamber, said system comprising a processor-based electronic component operatively electrically coupled to a mechanical sensor adapted to be mechanically coupled to a left ventricle so that said sensor provides an output signal for each one of atrial contractions, left ventricular contractions, and right ventricular contractions and wherein said stylet is in electrical communication with the processor-based electronic component, said method comprising:

instructions for sensing an atrial contraction and providing a temporal output signal related thereto;

instructions for sensing at least one ventricular contraction and if the at least one ventricular contraction comprises a single discrete ventricular contraction event, then:

instructions for continuing to deliver a cardiac resynchronization therapy without modifying any pacing therapy delay intervals; and if the at least one ventricular contraction comprises two discrete ventricular contraction events, then:

instructions for electrically stimulating a first ventricular chamber at an interval of time prior to or later than a second ventricular chamber;
instructions for detecting a contraction event of the first ventricular chamber relative to the second ventricular chamber;

instructions for modifying the interval of time until the at least one ventricular contraction comprises the single discrete ventricular contraction event; and

instructions for continuing to deliver the cardiac resynchronization therapy without further implementing instructions for modifying the interval of time.

20. A medium according to claim 5, further comprising instructions for detecting a contraction of an atrial chamber with the single tensiometric-sensing stylet disposed in or about the portion of the coronary sinus of the patient.